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NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			UNELUS, ERNEST	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/707,871	Applicant(s) LIU ET AL.	
	Examiner ERNEST UNELUS	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,10-22,24-27,30,32-53,78-87,90-93,97-101 and 103 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,10-22,24-27,30,32-53,78-87,90-93,97-101 and 103 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION
RESPONSE TO AMENDMENT

Claim rejections based on prior art

Applicant's arguments filed 11/20/2008 with respect to claims 1-4, 6, 10-22, 24-27, 30, 32-53, 78-87, 90-93, 97-101, and 103 have been fully considered but they are not persuasive.

In regards to “herein a new PSD can be attached to said external storage virtualization controller when said external storage virtualization controller is on-line”, see the office action below, which discloses, {wherein a new PSD can be [the words ‘can be’ are intended use. This limitation is mere statements of purpose or use or functional recitations. In re Sinex, 309 F.2d 488, 492, 135 USPQ 302, 305 (CCPA 1962) (statement of intended use in an apparatus claim did not distinguish over the prior art apparatus). If a prior art structure is capable of performing the intended use as recited in the claim, then it meets the claim. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See MPEP 2106 II-C] attached to said external storage virtualization controller when said external storage virtualization controller is on-line (see fig. 3 and paragraph 0030)}.

In regards to “wherein said group of PSDs include a first set of PSDs and a second set of PSDs, said first set of PSDs and said second set of PSDs are not received in a same

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enclosure, and said external storage virtualization controller further comprises at least one multiple-device device-side expansion port for coupling to said second set of said PSDs”, see the office action below, which discloses, {a group of physical storage devices (PSDs) (Discs in the disc pack 118 of disc drive 106, as discloses in paragraph 0018; see also figs. 3 and 6. A group of PSDs, for example, is four discs in two separate disc packs 118 in two separate disc drives 106)}. Therefore, a first set of PSDs is two discs in a disc pack of a disc drive and a second set is two other discs in another disc pack of another disc drive. Each disc drive has its own enclosure, as discloses in fig. 3 of Bicknell. See also paragraph 0024 of Bicknell, which discloses the controllers having ports.

In regards to “*wherein the external storage virtualization controller is configured to present redundantly a logical media unit on at least two of said plurality of host-side IO device interconnect ports*”, see fig. 3 and paragraph 0018 of Bicknell with discloses disc pack 18, which is being equated to ‘logical media unit’. Paragraph 0029 of Meehan discloses a controller having a ‘host-side IO device interconnect port’. Having a disc pack connected to a controller port that's connected to a host is being equated to the limitation above.

I. INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

1. The applicant’s oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in **37 C.F.R. 1.63**.

II. INFORMATION CONCERNING DRAWINGS

Drawings

2. The applicant's drawings submitted are acceptable for examination purposes.

III. REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-6, 8-16, 20-28, 30-37, 41-46, 50, 78-83, 86-87, 90-93, 97-101, and 103**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Meehan et al. (US pub. 2004/0177218).

5. As per **claims 1, 21, 78, and 90**, Bicknell discloses "A storage virtualization computer system (**system 100 of fig. 6**) comprising:
a host entity for issuing IO requests (**Host computer of fig. 6**);
an external storage virtualization controller (**controller 1**) coupled to said host entity for executing IO operations in response to said IO requests (**see fig. 6 and paragraph 0029**); and

a group of physical storage devices (PSDs) (**Discs in the disc pack 118 of disc drive 106, as discloses in paragraph 0018; see also figs. 3 and 6. A group of PSDs, for example, is four discs in two separate disc packs 118 in two separate disc drives 106**), each coupled to the external storage virtualization controller through a point-to-point serial-signal interconnect (**see fig. 6 and paragraph 0019**), for providing storage to the storage virtualization computer system through the external storage virtualization controller (**see paragraph 0027**),

wherein said computer system further comprises a detachable canister (**housing 116 of fig. 3, as discloses in para. 0018**) attached to said external storage virtualization controller for containing one of said at least one PSDs therein (**see fig. 2 and see paragraph 0019, which discloses “Disc drive 106 can preferably be removed without disturbing the operation of subsystem 100”**);

wherein said external storage virtualization controller is configured to define at least one logical media unit (**disc pack 118 of fig. 3, as discloses in para. 0018**) consisting of sections of at least one said group of PSDs (**see fig. 2 and see paragraph 0024**), and wherein a new PSD can be *[the words ‘can be’ are intended use. This limitation is mere statements of purpose or use or functional recitations. In re Sinex, 309 F.2d 488, 492, 135 USPQ 302, 305 (CCPA 1962) (statement of intended use in an apparatus claim did not distinguish over the prior art apparatus). If a prior art structure is capable of performing the intended use as recited in the claim, then it meets the claim. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See MPEP 2106 II-C]*

attached to said external storage virtualization controller when said external storage virtualization controller is on-line (**see fig. 3 and paragraph 0030**).

but fails to disclose expressly “wherein said external storage virtualization controller comprises: a central processing circuitry for performing said IO operations in response to said IO requests of said host entity;

at least one IO device interconnect controller coupled to said central processing circuitry;

at least one host-side IO device interconnect port provided in one of said at least one IO device interconnect controller for coupling to said host entity; and

at least one device-side IO device interconnect port provided in one of said at least one IO device interconnect controller for coupled to said group of PSDs through said point-to-point serial-signal interconnect, said device-side IO device interconnect port being a serial port for point-to-point serial-signal transmission; and

wherein said external SVC issues a device-side IO request to said IO device interconnect controller, and said IO device interconnect controller re-formats said device-side IO request and accompanying IO data into at least one data packet for transmission to said group of PSDs through said device-side IO device interconnect port”.

Meehan discloses “wherein said external storage virtualization controller comprises: a central processing circuitry (**microprocessor 406 of fig. 6, as discloses in para. 0028**) for performing said IO operations in response to said IO requests of said host entity (**see fig. 5 and para. 0028**);

at least one IO device interconnect controller (**FPGA 409 of fig. 6, as discloses in para. 0028**) coupled to said central processing circuitry (**see fig. 6**);

at least one host-side IO device interconnect port (**“host interface 411 (from the host)”**, **as discloses in para. 0029**) provided in one of said at least one IO device interconnect controller for coupling to said host entity (see para. 0029, which discloses **“Data to be written to storage disks 401-404 would move from the host interface 411 (from the host), optionally through a primary RAID Controller (if present), through the Interface connector 410, and into the buffer RAM 407 of RAID Controller 400”**); and

at least one device-side IO device interconnect port (**“interface 411”**, **as discloses in para. 0029**) provided in one of said at least one IO device interconnect controller for coupled to one of said at least one physical storage device through said point-to-point serial-signal interconnect (see para. 0029 and fig. 6, which show the interface 411 as part of the controller; in other words, the drawing illustrated part of the interface 411 is inside the controller. See para. 0029 and fig. 6 for SAS transmission and point-to-point serial-signal interconnect), said device-side IO device interconnect port being a serial port for point-to-point serial-signal transmission (See para. 0029 and fig. 6 for SAS transmission and point-to-point serial-signal interconnect); and

wherein said external SVC issues a device-side IO request to said IO device interconnect controller, and said IO device interconnect controller re-formats said device-side IO request and accompanying IO data into at least one data packet for transmission to said PSD through said device-side IO device interconnect port” (see para. 0029, which discloses the FPGA 409 **‘manipulating’ data between the host and the storage devices. Manipulating is a form of ‘re-formatting’**. The claim language is not specific as to how this reformatting is being done. See also para. 0016, which discloses **‘re-distributed’ the data**).

Bicknell et al. (US pub. 2003/0193776) and Meehan et al. (US pub. 2004/0177218) are analogous art because they are from the same field of endeavor of redundant array of independent disks (RAID) architectures.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a redundant array of independent disks (RAID) architectures, and more specifically, to a multiple level RAID architecture as taught by Meehan.

The motivation for doing so would have been because Meehan teaches, "In addition, a RAID 0 stripe can be written to the storage devices at the same time. This stripe allows for the data to be evenly written to the devices 120 in an attempt to maximize overall system performance" (see paragraph 0006).

Therefore, it would have been obvious to combine Meehan et al. (US pub. 2004/0177218) with Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the computer system to obtain the invention as specified in claims 1, 21, 78, and 90.

6. As per **claims 2, 22, 79, and 91**, the combination of Bicknell and Meehan discloses "The computer system of claim 1" [See rejection to claim 1 above] Bicknell discloses wherein said point-to-point serial-signal interconnect is a Serial ATA IO device interconnect (see **fig.6 and paragraph 0019**).

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7. As per **claims 3, 26, 86, and 92**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein a said group of PSDs comprises a SATA PSD (see paragraph 0019).

8. As per **claims 4, 30, 87, and 93**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein a said group PSDs comprises a PATA PSD and a serial-to-parallel converter (**data interface 144 of fig. 6**) is provided between said device-side IO device interconnect controller and said PATA PSD (see paragraph 0030).

9. As per **claims 6 and 32**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein one of said PSDs can be detached from said external storage virtualization controller when said external storage virtualization controller is on-line (see paragraph 0019, which discloses “**Disc drive 106 can preferably be removed without disturbing the operation of subsystem 100**”).

10. As per **claim 33**, the combination of Bicknell and Meehan discloses “The storage virtualization subsystem of claim 21” [See rejection to claim 21 above] Bicknell discloses wherein said a new PSD can be attached to said external storage virtualization controller when said external storage virtualization controller is on-line (see paragraph 0030).

11. As per **claims 10 and 24**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Meehan discloses wherein a said host-side IO device interconnect port and a said device-side IO device interconnect port are provided in the same IO device interconnect controller (see para. 0029 and fig. 6).

12. As per **claims 12 and 27**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein said storage virtualization controller comprises a plurality of host-side IO device interconnect ports each for coupling to a host-side IO device interconnect (see fig. 6 and paragraph 0026).

13. As per **claim 13**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein said external storage virtualization controller is configured to present redundantly a logical media unit on at least two of said plurality of host-side IO device interconnect ports (see paragraph 0019).

14. As per **claims 14 and 35**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein at least one said host-side IO device interconnect port is Fibre Channel supporting point-to-point connectivity in target mode (see paragraph 0030 and fig. 6).

15. As per **claims 15 and 36**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See rejection to claim 1 above] Bicknell discloses wherein at

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least one said host-side IO device interconnect port is Fibre Channel supporting private loop connectivity in target mode (see **paragraph 0030 and fig. 6**).

16. As per **claims 16 and 37**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See **rejection to claim 1 above**] Bicknell discloses wherein at least one said host-side IO device interconnect port is Fibre Channel supporting public loop connectivity in target mode (see **paragraph 0032 and fig. 6**).

17. As per **claims 20 and 41**, the combination of Bicknell and Meehan discloses “The computer system of claim 1” [See **rejection to claim 1 above**] Bicknell discloses wherein at least one said host-side IO device interconnect port is Serial ATA operating in target mode (see **paragraph 0019**).

18. As per **claims 34, 101, and 103**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 21” [See **rejection to claim 21 above**] Bicknell discloses wherein said group of PSDs include a first set of PSDs and a second set of PSDs, said first set of PSDs and said second set of PSDs are not received in a same enclosure (see **figures 3 and 6**), and said storage virtualization controller further comprises at least one multiple-device device-side expansion port (**Midplane Card ports 209 of fig. 6**) for coupling to said second set of said PSDs (see **fig. 6**).

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19. As per **claims 42 and 80**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 21” [See rejection to claim 21 above] Bicknell discloses comprising an enclosure management services mechanism (**interface 200, as discloses in paragraph 0024 and fig. 1**).

20. As per **claim 43**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 42” [See rejection to claim 42 above] Bicknell discloses wherein said enclosure management services mechanism manages and monitors at least one of the following devices belonging to the storage virtualization subsystem: power supplies, fans, temperature sensors, voltages, uninterruptible power supplies, batteries, LEDs, audible alarms, PSD canister locks, door locks (**see paragraph 0031**).

21. As per **claim 44**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 42” [See rejection to claim 42 above] Bicknell discloses wherein said enclosure management services mechanism is configured to support direct-connect EMS configuration (**see fig. 8**).

22. As per **claim 45**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 42” [See rejection to claim 42 above] Bicknell discloses wherein said enclosure management services mechanism is configured to support device-forwarded EMS configuration (**see fig. 8**).

23. As per **claims 46, 81, 82, and 83**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 42” [See rejection to claim 42 above] Bicknell discloses wherein said enclosure management services mechanism is configured to support direct-connect EMS configuration and device-forwarded EMS configuration (see fig. 2).

24. As per **claim 50**, the combination of Bicknell and Meehan discloses “The virtualization subsystem of claim 42” [See rejection to claim 42 above] Bicknell discloses wherein said EMS mechanism further comprises status-monitoring circuitry to communicate with said external storage virtualization controller (see paragraph 0031).

25. As per **claims 97-100**, the combination of Bicknell and Meehan discloses “The storage computer system of claim 1” [See rejection to claim 42 above] Bicknell discloses wherein said group of PSDs are received in a plurality of enclosures (see figures 3 and 6).

26. **Claims 11 and 25**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Meehan et al. (US pub. 2004/0177218) as applied to claim 1 above, and further in view of Otterness et al. (US pub. 2002/0152355).

27. As per **claims 11 and 25**, the combination of Bicknell and Meehan discloses “The storage virtualization computer system of claim 1,” [See rejection to claim 1 above], but fails to disclose expressly wherein said at least one IO device interconnect controller comprises a plurality of IO device interconnect controller; wherein said host-side IO device interconnect port

and said device-side I/O device interconnect port are provided in different said I/O device interconnect controllers.

Otterness discloses “wherein said at least one I/O device interconnect controller comprises a plurality of I/O device interconnect controller; wherein said host-side I/O device interconnect port and said device-side I/O device interconnect port are provided in different said I/O device interconnect controllers” (see **fig. 4, which discloses a controller such as a RAID controller 199 having a processor 216 such as the ‘central processing circuit’ as claimed. Fig. 4 also discloses multiple processor/memory controllers 204 and 206 connected to the processor 216. Multiple processor/memory controllers 204 and 206 are shown to have their own device port and host port. See para. 0048 for more detail).**

Bicknell et al. (US pub. 2003/0193776), Meehan et al. (US pub. 2004/0177218), and Otterness et al. (US pub. 2002/0152355) are analogous art because they are from the same field of endeavor of redundant array of independent disks (RAID) architectures.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a redundant array of independent disks (RAID) architectures, and more specifically, to a multiple level RAID architecture as taught by Meehan, and device interconnection topologies, and methods for communicating data or other information between such devices; more particularly to inter- and intra-device connection and communication topologies and methods for such communication; and most particularly to RAID storage system controllers that increase available storage device interconnect channel capacity by routing

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controller-to-controller messages to a communication channel separate from the communication channel normally used to communicate the RAID data as taught by Otterness.

The motivation for doing so would have been because Otterness teaches that”

Embodiments of the NorthBay.TM. provides support services for a RAID controller.

Among other things, the NorthBay ASIC implements a fast special-purpose-processor that computes the parity values used in the RAID system. The data for which the NorthBay ASIC is to handle memory operations and compute parity is specified by the RAID controller's CPU in response to host disk transactions” (see paragraph 0018).

Therefore, it would have been obvious to combine Otterness et al. (US pub. 2002/0152355) with Meehan et al. (US pub. 2004/0177218) and Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the storage virtualization computer system to obtain the invention as specified in claims 11 and 25.

28. **Claims 17, 19, 38, 40, 47, 48, 84, and 85**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Meehan et al. (US pub. 2004/0177218) and Rinaldis et al. (US pat. 7,107,343) as applied to claim 1 above, and further in view of Rabinovitz et al. (US pat. 6,483,107).

29. As per **claims 17, 19, 38, and 40**, the combination of Bicknell and Meehan discloses “The computer system of claim 1,” [See rejection to claim 23 above], including at least one said host-side IO device interconnect port is parallel/serial operating in target mode (see paragraph 0030), but fails to disclose expressly a SCSI.

Rabinovitz discloses a SCSI in a storage virtualization subsystem (**col. 16, line 49**).

Bicknell et al. (US pub. 2003/0193776), Meehan et al. (US pub. 2004/0177218), and Rabinovitz et al. (US pat. 6,483,107) are analogous art because they are from the same field of endeavor of peripheral storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a redundant array of independent disks (RAID) architectures, and more specifically, to a multiple level RAID architecture as taught by Meehan, and a canister and a casing of a computer peripheral enclosure as taught by Rabinovitz.

The motivation for doing so would have been because Rabinovitz teaches that a SCSI allows more connecting storage devices (**see col. 16, lines 43-54**).

Therefore, it would have been obvious to combine Rabinovitz et al. (US pat. 6,483,107) with Bicknell et al. (US pub. 2003/0193776) and Meehan et al. (US pub. 2004/0177218) for the benefit of creating the storage virtualization subsystem to obtain the invention as specified in claims 17 and 38.

30. As per **claims 47 and 84**, the combination of Bicknell and Meehan “The storage virtualization subsystem of claim 42,” [See rejection to claim 42 above], including the enclosure management services mechanism, but fails to disclose expressly wherein said enclosure management services mechanism is configured to support SES enclosure management services protocol.

Rabinovitz discloses a SES in a storage virtualization subsystem (**col. 17, line 23**).

Bicknell et al. (US pub. 2003/0193776), Meehan et al. (US pub. 2004/0177218), and Rabinovitz et al. (US pat. 6,483,107) are analogous art because they are from the same field of endeavor of peripheral storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a redundant array of independent disks (RAID) architectures, and more specifically, to a multiple level RAID architecture as taught by Meehan, and a canister and a casing of a computer peripheral enclosure as taught by Rabinovitz.

The motivation for doing so would have been because Rabinovitz teaches that a SES allow a user to monitor the enclosure from a remote location (**see col. 17, lines 29-31**).

Therefore, it would have been obvious to combine Rabinovitz et al. (US pat. 6,483,107) with Bicknell et al. (US pub. 2003/0193776) and Meehan et al. (US pub. 2004/0177218) for the benefit of creating the storage virtualization subsystem to obtain the invention as specified in claims 47 and 84.

31. As per **claims 48 and 85**, the combination of Bicknell, Meehan, and Rabinovitz discloses “The storage virtualization subsystem of claim 42,” [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism, and Rabinovitz further discloses the SAF-TE, (**see col. 17, line 29**).

32. **Claims 18, 39, 49, 51, 52, and 53**, are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Meehan et al. (US pub. 2004/0177218), as applied to claim 1 above, and further in view of Colton (US pub. 2005/0089027).

33. As per **claims 18 and 39**, the combination of Bicknell and Meehan discloses “The computer system of claim 1,” [See rejection to claim 1 above], including at least one said host-side IO device interconnect port (**see fig. 6**), but fails to disclose expressly wherein at least one said host-side IO device interconnect port is ethernet supporting the iSCSI protocol operating in target mode.

Colton discloses ethernet supporting the iSCSI protocol operating in target mode (**see fig. 11 and paragraph 1487, which discloses internet SCSI in an Ethernet network**).

Bicknell et al. (US pub. 2003/0193776), Meehan et al. (US pub. 2004/0177218), and Colton (US pub. 2005/0089027) are analogous art because they are from the same field of endeavor of data transfer.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a redundant array of independent disks (RAID) architectures, and more specifically, to a multiple level RAID architecture as taught by Meehan, and a system and method for transferring data optically via an intelligent optical switching network as taught by Colton.

The motivation for doing so would have been because Colton teaches that **”The Sun server(s) running Oracle should have a minimum of 2 high-speed SCSI disk drives to ensure adequate performance”** (see paragraph 1487).

Therefore, it would have been obvious to combine Colton (US pub. 2005/0089027) with Bicknell et al. (US pub. 2003/0193776) and Meehan et al. (US pub. 2004/0177218) for the benefit of creating the computer system to obtain the invention as specified in claims 18 and 39.

34. As per **claims 49, 51, and 53**, the combination of Bicknell and Meehan, and Colon discloses “The storage virtualization subsystem of claim 42,” [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism and a external storage virtualization controller (see fig. 2), and Colon further discloses 12C latches, (see fig. 11).

35. As per **claim 52**, the combination of Bicknell, Meehan, and Colon discloses “The storage virtualization subsystem of claim 42,” [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism as a micro-computer (see fig. 2), and Colon further discloses a CPU for running a program, (see paragraph 0810 and fig. 11).

IV. RELEVANT ART CITED BY THE EXAMINER

36. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant’s art and those arts considered reasonably pertinent to applicant’s disclosure. See **MPEP 707.05(c)**.

37. The following reference teaches a storage virtualization computer system.

U.S. PATENT NUMBER

Art Unit: 2181

US 2004/0123027; 2004/0117545; 6,516,370; 2004/0193791; 2004/0088482; 7,073,022

V. CLOSING COMMENTS

Conclusion

a. STATUS OF CLAIMS IN THE APPLICATION

38. The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. 707.07(i)**:

a(1) CLAIMS REJECTED IN THE APPLICATION

39. Per the instant office action, claims 1-4, 6, 10-22, 24-27, 30, 32-53, 78-87, 90-93, 97-101, and 103 have received a final action on the merits.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

b. DIRECTION OF FUTURE CORRESPONDENCES

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40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is (571) 272-8596. The examiner can normally be reached on Monday to Friday 9:00 AM to 5:00 PM.

IMPORTANT NOTE

41. If attempts to reach the above noted Examiner by telephone is unsuccessful, the Examiner's supervisor, Mr. Alford Kindred, can be reached at the following telephone number: Area Code (571) 272-4037.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Alford W. Kindred/
Supervisory Patent Examiner, Art Unit 2181
September 18, 2009
/E. U./
Examiner, Art Unit 2181

Ernest Unelus
Examiner
Art Unit 2181